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A. Prospects for radiological warfare

Two modes of radiological warfare are distinguished in the literature, and also in the United Nations General Assembly resolution: on the one hand the use of nuclear weapons in such a way as to maximize their radioactive effects, on the other hand the use of radioactive agents independently of nuclear explosions.

It is technically possible to manufacture nuclear weapons in such a way that they will cause a maximal amount of fall-out. But it is not probable that a country would deliberately do so, because it would hardly offer distinct military advantages. If nuclear weapons would ever be used, it may be assumed that they will be used with the aim of achieving a decisive effect against an opponent in a short span of time. The short-term lethal effects of a nuclear explosion are caused by blast, heat and initial radiation. Increasing the fall-out would cause harmful effects after weeks, months and even years. Normally, such long-term effects would seem not to be interesting from a military point of view. Moreover, the attacked area would become badly accessible on account of its radioactive contamination. The trend in nuclear weapons technology is going in the direction of cleaner weapons rather than dirtier ones.

The second method of radiological warfare, namely the use of radioactive agents independently of nuclear explosions, is likewise not very plausible.

In order to kill or harm people within a few hours, a radiation dose would be required of at least 1.000 roentgen. But the highly radioactive isotopes one would need for that purpose all have a short or very short half-life. This implies that they cannot be stored for later use. It is true, such isotopes can be produced. For instance, by irradiating uranium in a high-flux reactor one would obtain a considerable amount of highly radioactive material which would remain lethal during a few days. But the transport of this material to the target area would be a very difficult and cumbersome job, in the first place on account of the heavy protective shielding which would be needed for this extremely dangerous material. Large-scale use of such isotopes for so-called strategic purposes is out of the question.

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Whereas the use of highly radioactive materials for causing short-term effects would run into almost unsurmountable practical difficulties, the same does not apply to the use of less radioactive materials which can harm life or health after months or years. For this purpose one might use materials having a long half-life, for instance strontium-90, which has a half-life of thirty years. Such materials are not so difficult to handle and can be obtained relatively easily from the radioactive waste of reactors. But here the same would apply as with regard to the deliberate manufacture of "dirty" nuclear weapons: What would be the military rationale for achieving these long-term harmful effects?

Summing up: judging by the available information possibilities for radiological warfare do exist theoretically, but do not seem to be of much or even of any practical significance.

B. Arms control aspects of radiological warfare

In the light of the foregoing considerations it is difficult to see the practical usefulness of discussing arms control measures related to radiological warfare.

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